1. HIGH-ENERGY COLLIDER PARAMETERS: e^+e^- Colliders (I)

Updated in early 2012 with numbers received from representatives of the colliders (contact J. Beringer, LBNL). For existing colliders, the table shows parameter values as achieved by January 1, 2012. For future colliders, design values are quoted. Quantities are, where appropriate, r.m.s.; unless noted otherwise, energies refer to beam energy; H and V indicate horizontal and vertical directions. See full *Review* for more information.

	VEPP-2000 (Novosibirsk)	VEPP-4M (Novosibirsk)	BEPC-II (China)	DAΦNE (Frascati)	SuperKEKB (KEK)	LHC (as achieved in run 1)
Physics start date	2010	1994	2008	1999	1999	2009
Physics end date	—	—	—	—	—	—
Maximum beam energy (GeV)	1.0	6	0.510	6	1.89 (2.3 max)	250 (upgr. to 500)
Luminosity (10^{30} cm^{-2}s^{-1})	100	20	453	76 at 2.08 GeV	649	6×10^4
Time between collisions (μs)	0.04	0.6	0.014 to 0.22	0.008	0.0027	0.0005‡
Energy spread (units 10^{-3})	0.64	1	0.82 at 2.08 GeV	0.52	0.40	3.4
Bunch length (cm)	4	5	1.2	≈ 1.5	low current: 1 at 15mA: 2	0.0044
Beam radius (10^{-6} m)	125 (round)	H: 1000 V: 30	H: 340 V: 6.5	H: 380 V: 5.7	H: 260 V: 4.8	H: 0.045* V: 0.0009
Free space at interaction point (m)	±1	±2	±2.2 (±0.3 to PM quads)	±0.63	±0.295	±3.5
β^*, amplitude function at interaction point (m)	H: 0.06 – 0.11 V: 0.06 – 0.10	H: 0.75 V: 0.05	H: 0.94 V: 0.012	H: 1.0 V: 0.015	H: 0.26 V: 0.009	H: 0.0069 V: 6.8×10^{-5}
Interaction regions	2	1	1	1	1	1

† Time between bunch trains: 200ms.

‡ Time between bunch trains: 20ms.

* Effective beam size including non-linear and chromatic effects.